No.



9500247

Pioneer Hi-Bred International, Inc.

Migrens, there has been presented to the

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED, PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A part hereof, and the various requirements of LAW in such cases made and provided have been COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, therefore, this certificate of plant variety protection is to grant unto the said APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC ENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY ${
m LAW}$, the EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR ORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE PURPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT THE PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT

'2568'

In Testimony Marrest, I have hereunto set my hand and caused the seal of the Hunt Variety Protection Vilice to be affixed at the City of Washington, D.C. this thirtieth day of April in the year of our Lord

Plant Variety Protection Office Agricultural Marketing Service

REPRODUCE LOCALLY. Include form number and date on a	Il reproductions.		FORM APPROVED - OMB NO. 0581-005			
U.S. DEPARTMENT OF AGRICULTURE AGRICULTURAL MARKETING SERVICE SCIENCE DIVISION - PLANT VARIETY PROTECTION OF	FICE	The following statements are made in accordance with the Privacy Act 1974 (5 U.S.C. 552a).				
APPLICATION FOR PLANT VARIETY PROTECTION (Instructions and information collection burden statem	N CERTIFICATE					
NAME OF APPLICANT(S) (as it is to appear on the Certificate)	ent on reverse)	2. TEMPORARY DESIGNATION OR				
		EXPERIMENTAL NUMBER	3. VARIETY NAME			
Pioneer Hi-Bred International,	, Inc.	WBF0666D1	2568			
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Coun	ıtry)	5. TELEPHONE (include area code)	FOR OFFICIAL USE ONLY			
Research and Product Developme Wheat Research	ent Seemoss	(317) 945-7906	PVPG NUMBER			
3850 N. 100 E.						
Windfall, IN 46076		6. FAX (include area code)	DATE			
· · · · · · · · · · · · · · · · · · ·		(317) 945-8313	H / 1694 29 1995			
7. GENUS AND SPECIES NAME	8. FAMILY NAME (Bots	nical)	FIGING AND EXAMINATION FEE.			
Triticum aestivum	gramine	ae, dia	# 22.25 G2 \$125.50			
9. CROP KIND NAME (Common name)		·	5 DATE			
Wheat			* LC/29/35 (25/07)			
10. IF THE APPLICANT NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZAT Corporation	TION (corporation, partners	ship, association, etc.) (Common name)	C CERTIFICATION FEE:			
11. IF INCORPORATED, GIVE STATE OF INCORPORATION		12. DATE OF INCORPORATION	E DATE			
Iowa		May 1926	D			
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERV	/F	1 -	19482 - 196			
Dr. Gregory C. Marshall		AND RECEIVE ALL PAPERS	14. TELEPHONE (include area code)			
Pioneer Hi-Bred International,	Tna	The state of the s	(317) 945-7906			
Wheat Research	inc.	in the state of th	15. FAX finclude area codel			
3850 N. 100 E.						
Windfall, IN 46076		**************************************	(317) 945-8313			
18. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow In:	structions on reverse)					
a. M Exhibit A. Origin and Breeding History of the Variety		in the second of the second	-			
b. IV Exhibit B. Statement of Distinctness						
c. W Exhibit C. Objective Description of the Variety d. W Exhibit D. Additional Description of the Variety 200 Section 1 of the Variety 300 Section 2 of the Variety						
e. II Exhibit E. Statement of the Basis of the Applicant's Ownership						
1. Wyoucher Sample (2,600 yielde untreated seeds or, for tuber propagated	វា ដីក្នុងនិងក 🕟 🗇 ជាក្រ 🖰 🖰	recaja ie či si ressisti e				
g. 🗹 Filing and Examination Fee (\$2,450), made payable to "Treasurer of the	United States" (Mail to Pl	VPOI (1919)	d in a public repository)			
17. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VA	ARIETY NAME ONLY, AS	A CLASS OF CERTIFIED SEED? (See Section	n 83(a) of the Plant Variety Protection Act)?			
18. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS	والأراسويط الفاحية والمعاد مرجرات	to item 20)	25 2000 1070 1070 1070 1070 1070 1070 1070			
GENERATIONS?	18	and the case of the case of the second of	OF PRODUCTION BEYOND BREEDER SEED?			
	Section 1	☐ FOUNDATION ☐ REGISTERE				
20. HAS THE VARIETY OR A HYBRID PRODUCED FROM THE VARIETY BEEN RELE	ASED, USED, OFFERED FO	OR SALE, OR MARKETED IN THE U.S. OR O	THER COUNTRIES?			
21. The applicant(s) declare that a viable sample of basic seed of the variety will be for applicable, or for a tuber propagated variety a tissue culture will be deposited in a	urnished with application a	nd will be replenished upon request in according to the distribution of the contract of the co	fance with such regulations as may be			
The undersigned applicant(s) is(are) the owner(s) of this sexually reproduced or tu Section 41, and is entitled to protection under the provisions of Section 42 of the	15 15 15 15 15 15 15 15 15 15 15 15 15 1	n Programme College Programs	tinct, uniform, and stable as required in			
Applicant(s) is(are) informed that false representation herein can jeopardize protect						
SIGNATURE OF APPLICANT (Owner(still) / / / /	·	RE OF APPLICANT (Owner(s))				
Japory C. Marshall	SIGNATU	LO. M. LOCAL UWNER(S)				
NAME OF A COLUMN	and the state of t	4.4				
Construction of type;	NAME (Pla	ase print or type)				
Gregory C. Marshall	and the second s	And the second s				
CAPACITY OR TITLE U.S. Soft Winter DATE	CAPACITY	OR TITLE	DATE			
Wheat Coordinator 7/26,	195					

16A. Exhibit A. Origin and Breeding History of Pioneer Wheat Cultivar 2568

Pioneer cultivar '2568', a soft red winter wheat (Triticum aestivum L., em Thell.), was developed by Pioneer Hi-Bred International, Inc.. Using a pedigree selection breeding method, 2568 was derived from the biparental cross '2555 sib'/Pioneer line 'W1074B'. Pioneer line W1074B was derived from the cross: '2553' sib./Pioneer line 'W747'. Pioneer line W747 was derived from the cross: 'GA 80'/'Timwin'. The detailed parentage of 2568 is:

2555 sib./3/2553 sib.//GA 80/Timwin.

The final cross was made in the 1984 fall greenhouse cycle and designated 'WBF0666'. The subsequent breeding history of 2568 is described below.

**		
Year ——	Generation	
1984	Cross made	
1985	F1	Grown in spring transplant nursery at Windfall, IN.
1985-86	F2	Bulk populations grown at Windfall and Ft.Branch, IN. Selections made.
1986-87	F3	Headrows of F2 selections grown at Windfall and Ft.Branch, IN. Heads harvested from selected rows and remaining row bulked for yield test. This selection made at Windfall.
1987-88	F4	Headrows of F3 selections grown at Windfall and Ft. Branch, IN. This selection made at Windfall.
1988-89	F5	Seed from eight heads from each selected F4 row were planted in the greenhouse at Hutchinson, KS. Two heads tracing to each of the 8 F4 heads per selected row were harvested.
1989	F6	From each F5 head, four F6 hill plots were grown in spring transplant nursery at Windfall, IN. The hill plots from each F5 head were harvested in bulk.
1989-90	F7	Preliminary yield testing of F5 sel. from F6 hill plots. Selection designated WBF0666D1.
1990-91	F8	Advanced yield testing of WBF0666D1. 200 heads harvested from small increase.
1991-92	F9	Elite yield testing of WBF0666D1. 100 purification headrows grown. Offtype rows destroyed and remaining rows individually cut and threshed. 200 heads harvested from these rows.

16A. Exhibit A. (con't.)

1992-93	F10	Elite yield testing continues. Seed from purification headrows planted in individual progeny plots which surround 200 purification headrows. Offtype progeny plots and headrows destroyed prior to harvest. Remaining progeny plots harvested in bulk, which constituted breeders seed, then turned over to Pioneer's Parent Wheat Seed Dept. for further increase.
1993-94	F11	Elite yield testing continues, designated 'YW532'. Pioneer Parent Wheat Seed Dept. continues increase.
1994-95	F12	Elite yield testing continues, designated 'XW532'. Pioneer Parent Wheat Seed Dept. continues increase.

Decision to release WBF0666D1 was made in August, 1995, at which time it was given the commercial code 2568.

The cultivar 2568 was bred and selected at each generation for any or all of the following characteristics: disease resistance, plant type, plant height, head type, straw strength, maturity, grain yield, test weight, and milling and baking qualities.

2568 has been observed to be uniform and stable since the seventh generation, or the last five generations. Variants may be slightly taller plants or awnless plants, neither at a frequency greater than 1/45,000 plants.

16B. Exhibit B. Statement of Distinctness

2568 is most similar to Pioneer cultivar 2555 but with the following distinguishing characteristics:

- 1) The anther color of 2568 is yellow while that of 2555 is purple.
- 2) The last internode of the rachis of 2568 has hairiness present while it is absent on 2555.
- 3) A waxy bloom is absent from the stems of 2568 while it is present on the stems of 2555.
- 4) The flag leaf of 2568 is erect and twisted with no waxy bloom on the flag leaf sheath, while the flag leaf of 2555 is recurved, not twisted, and with a waxy bloom on the flag leaf sheath.
- 5) The spike of 2568 is dense while that of 2555 is lax.
- 6) The coleoptile color of 2568 is red while that of 2555 is purple.
- 7) Anthocyanin is absent in the seedlings of 2568 while it is present in the seedlings of 2555.
- 8) The phenol reaction of 2568 is brown while that of 2555 is black (method as described by W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity.

U. S. DEPARTMENT OF AGRICULTURE AGRICULTURAL MARKETING SERVICE LIVESTOCK, MEAT, GRAIN AND SEED DIVISION BELTSVILLE, MARYLAND 20786

EXHIBIT C (Wheat) इत्यान प्राप्त करण हरू । हर्नु <mark>। हे प्रश्नुक सुन पुरस्कार</mark> रहे

OBJECTIVE DESCRIPTION OF VARIETY WHEAT (TRITICUM SPP.) INSTRUCTIONS: See Reverse.

	RITICUM SPP.)
Pioneer Hi-Bred International, Inc	FOR OFFICIAL USE ONLY
Wheat Research 3850 N. 100 E. Windfall, IN 46076	VARIETY NAME OF TEMPORARY DESIGNATION 2568 WBF0666D1 (temp. designation
Place the appropriate number that describes the varietal charact	
Place a zero in first box (c.s. 0 8 9 or 0 9) when numbe	ter of this variety in the boxes below. r is either 99 or less or 9 or less.
1. KIND:	
1 1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT	5 = POLISH 6 = POULARD 7 = CLUB
2. TYPE,	
2 1 = SPRING 2 = WINTER 3 = OTHER (Specify)	1 = SOFT 3 = OTHER (Specify) 2 = HARD
2 1 = WHITE 2 = RED 3 = OTHER (Specify)	
3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:	
2 0 2 FIRST FLOWERING	2 0 7 LAST FLOWERING
4. MATURITY (50% Flowering):	
0 2 NO. OF DAYS EARLIER THAN	. 7 1 = ARTHUR 2 = SCOUT 3 = CHRIS
NO. OF DAYS LATER THAN	A = LEMHI 5 = NUGAINES 6 = LEEDS
5. PLANT HEIGHT (From soil level to top of head):	
0 9 3 cm. High	
CM. TALLER THAN	
0 5 CM. SHORTER THAN	7 1 = ARTHUR 2 = SCOUT 3 = CHRIS 7 = 2555
PLANT COLOR AT BOOTING (See reverse):	7. ANTHER COLOR:
2 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN	1 1 = YELLOW 2 = PURPLE
STEM:	
Anthocyanin: I = ABSENT 2 = PRESENT	1 Waxy bloom: 1 = ABSENT 2 = PRESENT
Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT	1 Internodes: 1 = HOLLOW 2 = SOLID
NO. OF NODES (Originating from node above ground)	1 8 CM. INTERNODE LENGTH BETWEEN FLAG LEAF
AURICLES:	
Anthocyanin: I = ABSENT 2 = PRESENT	2 Hairiness: = ABSENT 2 = PRESENT
. LEAF:	
Flag leaf at 1 = ERECT 2 = RECURVED booting stage: 3 = OTHER (Specify):	2 Flag leaf: 1 = NOT TWISTED 2 = TWISTED
Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT	1 Waxy bloom of flag leaf sheath: I = ABSENT 2 = PRESENT
2 MM. LEAF WIDTH (First leaf below flag leaf)	3 1 CM. LEAF LENGTH (First leaf below flag loof):
BM (MGS 470.6 (6.92) (Formark) Form 1 BCS 470.6 (0.70)	

	<u> </u>		10 W C 1 1
11. HEAD: 2 Density: 1 = LAX	2 = DENSE	Shape:	1 = TAPERING 2 = STRAP 3 = CLAVATE 4 = OTHER (Specify)
4 Awnedness: 1 = A	WILESS 2 = APICALLY AWNLETED	3 = AWNLETED	4 = AWNED:
2 Color at maturity: 5	1 = WHITE 2 = YELLOW . 3 = PINK 4 = BROWN 6 = BLACK 7 = OTH		
0 9 CM. LENGTH	5 A.	1 3 MM	A. WIOTH
12. GLUMES AT MATUR 2 Length: 1 = SHORT 3 = LONG	_		1 = NARROW (CA. J mm.) 2 = MEDIUM (CA. 3.5 mm 3 = WIDE (CA. 4 mm.)
Shoulder 1 = WANT shape: 4 = SQUA		2 Beak: 1	= OBTUSE 2 = ACUTE 3 = ACUMINATE
13. COLEOPTILE COLOR	the state of the s	14. SEEDLING	ANTHOCYANIN: A TELEPROPERTY OF THE
2 1 = WHITE 2 = F			ENT 2 = PRESENT
15. JUVENILE PLANT GE	ROWTH HABIT:		The second secon
2 1 = PROSTRATE	2 = SEMI-ERECT 3 = ERE	СТ	A THE RESIDENCE OF THE RESIDENCE OF THE SECOND SECO
16. SEED:			
Shape: 1 = OVATE	2 = OVAL 3 = ELLIPTICAL	1 Cheek:	= ROUNDED 2 = ANGULAR
2 Brush 1 = SHORT	2 = MEDIUM 3 = LONG	2 Brush:	I = NOT COLLARED 2 = COLLARED
Phenol reaction (See instructions):	1 = IVORY 2 = FAWN 3 = LT. BROW 4 = BROWN 5 = BLACK		
3 Color: 1 = WHITE	2 = AMBER 3 = RED 4 = PURPLE	5 = OTHER (Sp	ecify)
0 7 MM. LENGTH	0 4 MM. WIDTH	3 6 GM.	PER 1000 SEEDS
17. SEED CREASE:			
1 Width: 1 = 60% OR L	ESS OF KERNEL 'WINOKA'	2 Depth:	1 = 20% OR LESS OF KERNEL 'SCOUT'
Z-1	ESS OF KERNEL 'CHRIS'		2 = 35% OR LESS OF KERNEL 'CHRIS'
	AS WIDE AS KERNEL 'LEMHI'	· · · · · · · · · · · · · · · · · · ·	3 = 50% OR LESS OF KERNEL 'LEMHI'
	ted, 1 = Susceptible, 2 = Resistant)		
2 STEM RUST (Races)	2 LEAF RUST (Races)	O STRIPE F	O LOOSE SMUT
2 POWDERY MILDEW	O BUNT	OTHER (S	pocity)
19. INSECT: (0 = Not Texts	id, 1 = Susceptible, 2 = Resistant)		
O SAWFLY	O APHID (Bydv.)	O GREEN BU	JG CEREAL LEAF BEETLE
OTHER (Specify)	HESSIAN FLY	O GP	0 A 1-8 1-C
	RACES:		
		0 0	1 E O F 1 1
	TY MOST CLOSELY RESEMBLES THAT S		the state of the s
CHARACTER	NAME OF VARIETY	CHARACT	
Plant tillering	2548	Seed size	
Leaf size Leaf color	2552 2552	Seed shap	· · · · · · · · · · · · · · · · · · ·
	2552	Coleoptile elor	
Leaf carriage	2002	Seedling pigme	ntation 2555

INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

- (a) L.W. Briggle and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.
- (b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. (Soo attachment.)

16D. Exhibit D. Additional Description of the Variety.

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1) Yield and agronomic data.

Preliminary yield testing of 2568 began in the 1989-90 growing season and wide scale yield testing began in 1990-91 and continues to the present. 2568 has shown adaptation to the northern soft red winter wheat growing region in tests grown in Michigan, Ohio, Indiana, Illinois, and Missouri (Table 1).

- 2) Information on reaction to major diseases.
- Leaf rust Moderate resistance to prevalent races in the northern soft wheat region. Postulated to have Lr18 and an unidentified gene(s) based on seedling tests conducted by the Cereal Rust Lab in St.Paul, MN.
- Powdery mildew Moderate resistance to prevalent races of powdery mildew in the northern soft wheat region.
- Soil Borne Mosaic and Wheat Spindle Streak Mosiac viruses Excellent resistance to both viruses.
- Leaf Blight Good tolerance to the complex of common pathogens which cause leaf blights including; Septoria tritici blotch, Septoria nodorum blotch, and tan spot.
- 3) Information on reaction to major insect pests.
- Hessian fly Susceptible to the predominant biotypes of Hessian fly in the northern soft wheat region. Has been screened to biotypes B, C, E, and L in tests conducted by the Dept. of Entomology, Purdue University, in conjunction with the USDA-ARS Insect and Weed Control Unit.
- 4) Information on milling and baking qualities.

2568 has demonstrated acceptable milling and baking qualities as compared to current predominant soft wheat varieties (Table 2).

Table 1. Varietal yield performance and agronomic characteristics recorded in Pioneer Elite yield tests during the period 1992-94.

Variety	grain yield	test weight	plant height	head date	winter surviv.	leaf rust	leaf blight	powd. mil.	SBMV+	SSMV
	bu/ac	lb/bu	сш	Jan.1	1–9@	1-90	1–9@	1-9@	1–9@	1-9@
2568 2548 2555 2510 Cardinal Clark	90.3 83.5 85.5 84.9 77.9 70.2	57.7 57.6 56.9 56.3 56.6 56.8	93 91 98 93 106 98	134.8 137.8 137.1 140.2 139.5 133.6	5.0 4.7 4.9 5.8 5.0 5.2	5.5 6.0 4.3 7.5 5.5 3.3	5.3 5.5 7.0 5.5 4.8	5.7 7.1 6.3 5.7 4.8 5.7	7.0 2.5 7.5 8.2 3.7 7.2	8.0 4.0 8.0 8.0 6.5 7.0
lsd(0.05) # loc # year	3.0 29 3	0.7 17 3	2.4 6 3	1.0 6 3	0.7 6 2	1.5 2 1	1.5 2 1	0.9 6 2	1.1 3 3	0.9 1 1

[@] scale of 1 to 9, where 9 = excellent or resistant: 1 = poor or susceptible.

Data in the above table gathered at: Truxton, MO, Altamont, IL, Mascoutah, IL, Carlisle, IN. Westport, IN, Ft. Branch, IN, Windfall, IN, Napolean, OH, Pitsburg, OH, Bucyrus, OH, Blissfield, MI..

⁺ Data collected at the University of Illinois SBMV nursery.

Table 2. Soft wheat quality data from the Fioneer Quality Lab, Johnston, IA, 1991-1994.

Variety	flour yield	break flr yld	flour protein	AWRC	cookie	top grain	top grn abnom.	mill score	bake score	
	%	%	. %	%	cm	1-90	1-9@			-
2568	69.5	35.4	8.4	58.7	19.0	4.2	4.2	5	4	
2510	73.3	36.6	8.0	57.7	19.1	5.1	6.4	7	5	
2548	70.9	34.7	8.1	58.1	18.4	3.0	4.2	5	4	
2555	73.2	38.8	8.1	56.1	19.6	5.4	6.6	8	g	
Cardinal	72.9	34.6	8.5	55.1	19.4	4.6	7.4	6 .	6	
Clark	70.1	35.0	8.7	56.3	19.0	5.0	5.0	4	5	
										-
# observ.	9	9	9	9	9	9	9			•

Trait abbreviations used in the above table.

AWRC = Flour Alkaline Water Retention Capacity (%).

Cookie = Cookie diameter in cm.

Top grain = Top grain rating of cookie, 1-9 scale (1=poor, 9=excellent).

Top grn abnorm. = Top grain abnormalities of cookie, 1-9 scale, (1=narrow valleys, 9=wide valleys).

Mill score = milling score, a rating which weights flour yield 60% and break flour yield 40% (1=poor, 9=excellent).

Bake score = Baking score, a rating which weights cookie spread 60% and AWRC 40% (1=poor, 9=excellent)

16E. Exhibit E. Statement of the Basis of Applicant's Ownership

The variety, '2568', for which plant variety protection is sought, was developed by employees of Pioneer Hi-Bred International, Inc., Research and Product Development. By agreement between employees and Pioneer Hi-Bred International, Inc., all rights to any invention, discovery or development while an employee are assigned to Pioneer Hi-Bred International, Inc. with no rights retained by the employee.

Pioneer Hi-Bred International, Inc., Research and Product Development, believes it is the sole, original, and first breeder of the 2568 variety of soft red winter wheat for which it solicits a certification of protection.